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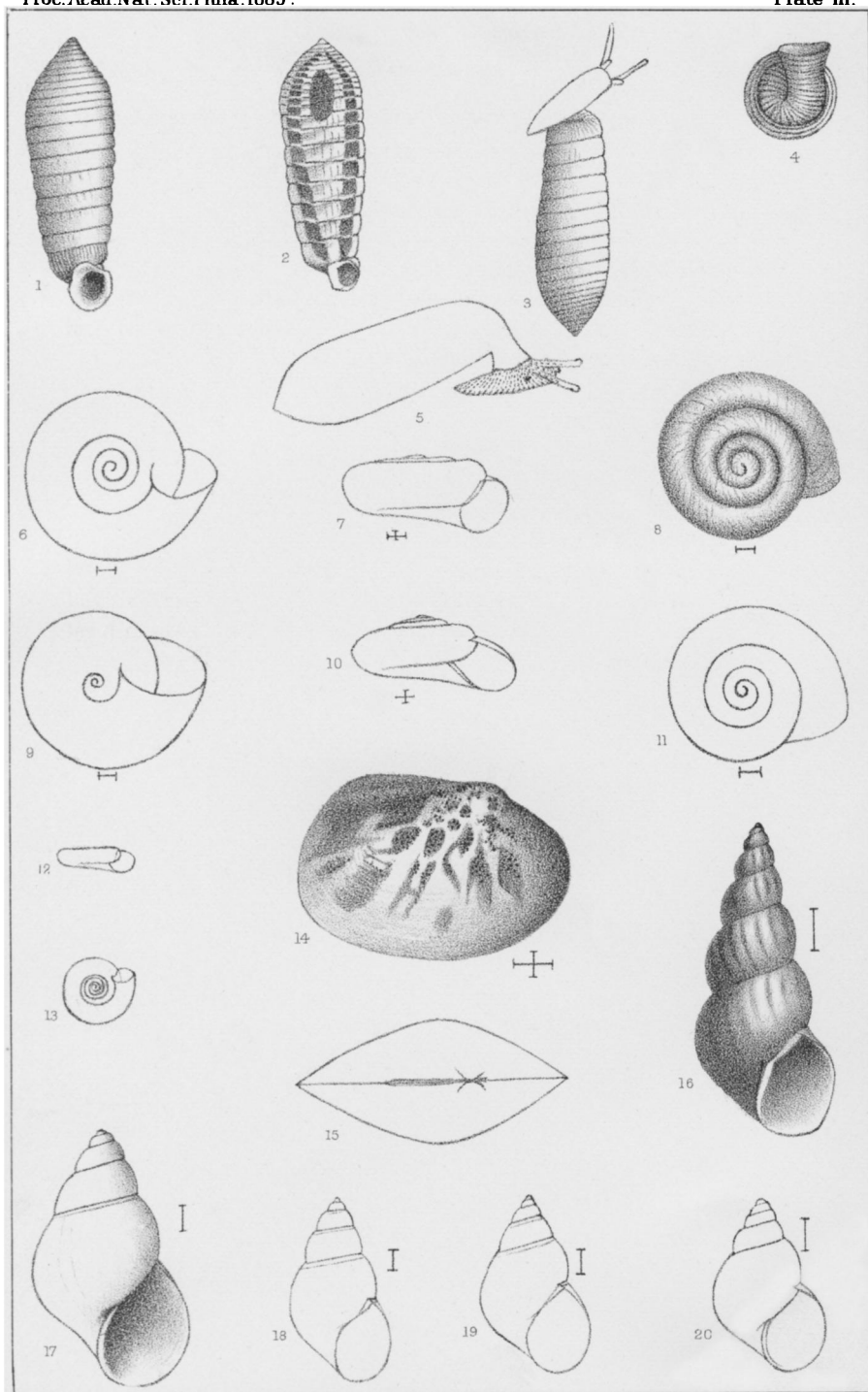
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PILSBRY ON NEW AND LITTLE KNOWN MOLLUSKS.

NEW AND LITTLE-KNOWN AMERICAN MOLLUSCS. No. 1.

BY HENRY A. PILSBRY.

Under the above title I propose to describe and figure the species of American mollusks, either new to science or imperfectly understood, accumulating from time to time in the collection of this Academy. In this first contribution are presented the results of my study of a number of forms received from various collectors and localities in the Southern States, Mexico, etc.

Holospira elizabethæ Pilsbry. Pl. III, figs. 1 to 5.

Shell imperforated, cylindrical, becoming narrower toward the base, rather solid, white, opaque, the apex flesh-colored; whorls 17 to 22, slightly convex, slightly, irregularly striate near the sutures, nearly smooth in the middle, the last whorl costulate-striate, flesh-tinted beneath, narrower than the preceding whorls, its last half rounded, not carinated beneath, produced forward, expanded toward the peristome; aperture round, truncate above; peristome expanded, thin, continuous, its upper margin slightly sinuous. Spire wider above, terminating in a short flesh-colored cone; apex obtuse, the apical whorl rather large and prominent. Internal column wide above, tapering toward the base, hollow, marked by regularly spaced longitudinal fold-like ridges.

Alt. 21, diam. maj. 5, of penult. whorl 4 mill.

Alt. 15, diam. maj. $5\frac{1}{2}$ of penult. whorl $4\frac{1}{2}$ mill.

Alt. 16, diam. maj. $5\frac{1}{2}$ of penult. whorl 4 mill.

Aperture: alt. 3, diam. 3 mill.

Village of Amula, between Tixtla and Chilapa, State of Guerrero, S. W. Mexico.

Although the proportions of length to diameter are so variable, the aperture is nearly the same size in all of the specimens. The species is decidedly larger than any described *Holospira*. Its nearest allies seem to be *H. Gealii* H. Ad., *H. imbricata* Mart., *H. microstoma* Crosse and Fischer; but I need not here compare these species with *H. elizabethæ*, for they can be separated at a glance. I am indebted to Mr. Herbert H. Smith, the well-known entomologist, for specimens.

The animal is whitish, the whole surface reticulated and granose, the granules elongated, brown. The foot is about 6 mill. in length, 2 mill. broad. The mantle is about central. It is very timid. Ac-

cording to Mr. Smith, the species is abundant at the locality given above, although not found in the surrounding country. Like the other species of *Holospira* it lives upon rocks. Movement upon a horizontal surface is evidently a difficult feat, the heavy shell rolling from side to side in a most embarrassing way; but on the perpendicular sides of a glass jar, Elizabeth's *Holospira* is quite at home, moving slowly but easily in any direction, the graceful shell always hanging vertically.

Helix (Microphysa) hypolepta Shuttleworth. Pl. III, figs. 6, 7, 8.

Of this minute form no diagnosis or figures have been published, although the name has been upon the lists for many years. The shell was apparently unknown to Pfeiffer except by the remarks of Shuttleworth, who says under his diagnosis of *H. minuscula* Binn.: "Altera species proxima, sed testa aperte umbilicate, et anfr. ultimo basi devio distincta, in insula Bermuda occurrit, cujus specimina plurima ab am. Bland accepti, atque *H. hypolepta* nominavi."

The shell is minute, discoidal, whitish, subtranslucent and shining, with wrinkles of increment above, nearly smooth beneath. The four whorls are very convex, quite gradually widening, the last one with the periphery above its middle, the lower lateral surfaces sloping somewhat as in *H. vortex* Pfr. The aperture is small, not very oblique, oval. The lip is acute, upper and basal margins quite arcuate, the baso-columellar margin slightly expanded. The umbilicus is broad, more than one-third the diameter of the shell.

Alt. 1, diam. $2\frac{1}{4}$ mill.

It is evidently allied to *H. (Microphysa) vortex* Pfr., but is much smaller, flatter, with broader umbilicus. I need not compare *Zonites minusculus* with this shell; a glance at the figures will show at once the difference.

Helix hypolepta. Shuttleworth, Diagnosen neuer Mollusken, no. 6, from the Bern. Mittheil., March, 1854, p. 129.

The group *Microphysa*, in which I have placed this shell has been a stumbling block to most of the authors who have recognized it. It consists of small, umbilicated, thin, hyaline shells, with sharp lip to the lunar-oval aperture, convex whorls and impressed sutures. There is little in all this to separate it from certain forms of *Zonites* (*Z. minusculus*, for example). But the *Zonites* have narrow aculeate marginal teeth to the radula, while these shells, typified by *H. boothiana* Pfr., have the dentition of *Patula*. The marginal teeth are low, wide, with several denticles.

Of course the miscellaneous collection of small *Helices* under *Microphysa* in Albers-Marten's *Die Heliceen* should be to some extent dismembered (although most of them are probably true *Microphysæ*), as well as the genus as constituted by Binney (Terr. Moll. v.), and only the species agreeing in characters of shell and dentition with *H. boothiana*, *H. vortex*, *H. incrustata* etc. be included. This group then, after the elimination of all snails with narrow, thorn-shaped marginal teeth, will comprise about twenty species of West Indian shells. Its relations are probably with *Patula*. The jaw so far as I know is ribbed; but this is a character of secondary importance. *Microphysa* has nothing to do with the *minusculus* group of small *Zonites*. It belongs to a different family.

Zonites dallianus Simpson. Pl. III, figs. 9, 10, 11.

Shell minute, depressed, narrowly umbilicated, fragile, pale straw-colored, somewhat shining; under a lens seen to be marked with delicate growth-lines above, smoother beneath. Spire a little convex; apex subacute; sutures scarcely impressed. Whorls three and one-half, scarcely convex, the last wide. Aperture oblong-lunate, oblique, upper and lower margins sub-parallel, slightly converging; peristome acute.

Alt. $1\frac{1}{2}$, diam. maj. 3, min. $2\frac{1}{2}$ mill.

West Florida, at Shaw's Point, Manatee Co., and Little Sarasota Bay.

Differs from *Z. arboreus* Say in the smaller spire and wider last whorl; fewer whorls; differently shaped aperture. It is about half the size of *Z. arboreus*, and the sculpture is the same as in that species. The *Helix ottonis* of Pfeiffer, of which specimens from Cuba and Hayti are before me, has no special relationship to this species, but is undoubtedly a synonym of *Z. arboreus*, as Pfeiffer himself concluded. *H. ottonis* differs from *arboreus* in nothing but the lighter color; the form and dimensions are precisely as in *arboreus*. (See Pfr. in *Wiegmann Archiv für Naturgeschichte*, 1840, p. 251; the species was never described in the "*Monographia Heliceorum*.")

The aperture in *Z. dallianus* is less lunate than in *Z. arboreus*, embracing less of the penultimate whorl; seen from beneath, the greater portion of the aperture lies outside of the periphery of the penultimate whorl; whilst in *Z. arboreus* the reverse is the case. The much smaller size of *dallianus* also separates it from *Z. arboreus*.

This species was sent me under the above name by Mr. Chas. T. Simpson, the well-known student of Floridan shells. The same

form I find in the museum of the Academy, collected by Mr. Henry Hemphill.

Zonites singleyanus Pilsbry. Proc. A. N. S. Philada., 1888, Pl. xvii, figs. m, m, m.

Shell minute, broadly umbilicate, planorboid, the spire scarcely perceptibly exerted; subtranslucent, waxen white, shining, smooth, under a strong lens seen to be slightly wrinkled by growth-lines; whorls three, rather rapidly increasing, separated by well-impressed sutures, convex, the apex rather large; body-whorl depressed, slightly descending, indented below around the umbilicus; aperture small, semilunar, oblique; peristome simple, acute. Umbilicus nearly one-third the diameter of the shell, wide, showing all the whorls.

Alt. 1, diam. 2 mill.

New Braunfels, Comal Co., Texas.

Allied to *Z. minusculus*, but much more depressed, more shining, smoother, smaller, with broader umbilicus and a complete whorl less than *minusculus*.

This species, one of the most distinct of the smaller forms of *Hyalina*, was communicated to me by Mr. J. A. Singley, in whose honor it is named. I have also found a few specimens among the shells collected by myself in central Texas, during the winter of 1885-'86. With *Z. singleyanus* at New Braunfels are found quantities of *Z. minusculus*. The latter species exhibits some variation, being often more depressed than most northern specimen. This depressed form has been noticed in Mexico by Strebel,* who proposes for *Z. minusculus* the new generic title of *Chanomphalus*, which of course is completely synonymous with *Pseudohyalina* Morse, 1864, and this again is not different enough from *Hyalina* to warrant the erection of a new genus or sub-genus. There is some variation in the width of the umbilicus in Texan specimens of *Z. minusculus*, but I have not seen specimens with it so wide as Dr. Dall indicates for his var. *alachuana*, from Florida. *H. elegantulus* Pfr. is about the size and form of my *Zonites singleyanus*, but it is a strongly sculptured species.

It may not be out of place here to note the fact that the *Helix* (*Polygyra*) *hippocrepis* Pfr. has been rediscovered by Mr. Singley, near New Braunfels; as typical examples sent me attest. This species has been heretofore known by but one specimen in America

* Vide Beitrag zur Kenntniss der Fauna mexikanischer Land und Süsswasser Conchylien, Theil iv, p. 19, pl. iv, fig. 10. (1880.)

as far as I am aware. The shell exhibits a type of aperture complications different from any other species of *Polygyra*.

Pæcilonites reinianus Pfr. var. ***goodei*** Pilsbry. Pl. III, figs. 12 and 13.

This form is similar in coloration and texture to *P. reinianus*. It is more broadly umbilicated, planorboid, the spire flat, or even sub-immersed; whorls six.

Alt. 3, diam, 10 mill.

Among the Bermudan shells sent to Prof. Heilprin from the U. S. Nat. Mus., were a number of this variety, which seems to me distinct enough for a name. The types of the variety are No. 94,424 of the National Museum register. Collected by G. Browne Goode.

Pæcilonites bermudensis Pfr.

The result of my dissection of this species was a surprise to me, for I had expected the same form of genitalia found in *Zonites*. The genitalia are figured on plate xvii of the Proceedings of this Academy for 1888, figs. n, o. The penis (p.) is rather short, *convoluted*, thick, the vas deferens inserted at its termination, is rather short. The cloaca is large, wide; below the penis there is a long club-shaped sac (d.), its base dilated where it enters the cloaca. This is probably a dart-sack, although the specimens examined by me contained no dart. On the penis near its base arises a duct (d.), which uniting with another (d.) arising opposite the penis, is continued into a long duct coiled around the vagina, and ends in a small oval bulb, the receptaculum seminis or spermatheca (sp.). The way it is coiled around the vagina is shown also in fig. o, which represents another specimen. The albumen gland, etc. offer no unusual characters. I did not dissect out the ovo-testis. My specimens were quite hard, having been in strong spirit.

The connection of the duct of the spermatheca with the penis is unique as far as I know, in the Pulmonata, and suggests the probability of self-impregnation.

Mr. W. G. Binney has kindly called my attention to his note upon the dentition and jaw of *H. bermudensis* and the dentition of *H. circumfirmata* in the Ann. N. Y. Acad. Sci., iii, p. 86, 105. The first species is placed by him with doubt in *Zonites* with the remark that "it seems to belong to no described genus." *H. circumfirmata* is left in *Microphysa*, for want of a better place, but Mr. Binney points out the fact that the species belongs to the *Vitrinea* rather than to the *Helicea*.

Mr. Mazyck, of Charleston, S. C., has also published a note upon *H. bermudensis*, since my own paper was issued, and I am indebted to him for a copy of it. *H. bermudensis* is recognized by Mazyck as the type of a new genus, *Juno*, which of course becomes a synonym of *Pæcilozonites*.

Mr. C. F. Ancey has likewise bestowed a subgeneric name upon *H. bermudensis*; and I suppose that for some years to come we will have an annual harvest of "genera" for one or another member of this little group! I would suggest that *P. circumfirmatus* or *P. reinianus* be selected as "types" for future "genera," as the synonymy of *bermudensis* is becoming inconveniently cumbersome!

The synonymy of *Pæcilozonites* is as follows:

Helix Pfeiffer, Monographia Heliceorum Viventium i, p. 188, and of most authors.

Hyalinia Pfeiffer-Clessin, Nomenclator Hel. Viv. p. 69. 1881.

Hyalosagda Pfeiffer-Clessin, Noment. Hel. Viv. p. 75.

Sagda (*Hyalosagda*) Tryon, Manual of Conchology, 2d series, iii, p. 9.

Trochomorpha Albers, Die Heliceen, 1850, p. 116.

Caraculus Albers-Martens, Die Heliceen, 1860, p. 156.

Zonites? and *Microphysa*? W. G. Binney, Ann. N. Y. Acad. Sci. iii, p. 86, 105.

Pæcilozonites Böttger, Jahrb. f. Min. Geol. u. Paleont. 1884, ii Bd., p. 139.

Pæcilozonites ("Sandb") Tryon, Manual of Conchology, 2d series, iii, p. 19, 95.

Bermudia Ancey, Conchologists' Exchange, i, p. 53, 1887.

Juno Mazyck, Proc. Elliott Soc. Nat. Hist., 1888, p. 210 (issued Mar. 19, 1889).

Pæcilozonites Pilsbry, Proc. Phila. Acad. Nat. Sci. 1888, p. 285.

H. bermudensis Pfr. is the type of the three genera—*Pæcilozonites*, *Bermudia* and *Juno*.

***Bythinella æquicoostata* Pilsbry.** Pl. III, fig. 16.

Shell sub-imperforate, narrow, elongated, composed of about $6\frac{1}{2}$ very convex whorls, separated by profound sutures; the spire is long, tapering, a trifle obtuse at the apex. The color is corneo-olivaceous; the whorls are slightly marked by delicate growth-lines. The spire has longitudinal low, fold-like ribs, which are sometimes nearly obsolete upon the body-whorl. Aperture oval or somewhat quadrate in outline, less than one-third the length of the shell; peristome

thin, acute, continuous, but closely adnate on the parietal wall above the sub-perforate umbilicus; columella slightly folded.

Alt. 5-6, diam. 2 mill.

Sumter Co. and Haulover Canal, at the head of Indian River, Fla.

This shell is similar to the form of *B. nickliniana* called *B. attenuata* Hald. in shape. It is distinguished by the low folds of the surface. When these are well developed the shell has somewhat the aspect of a tiny *Goniobasis plicifera* Lea. Mr. John Campbell of Germantown, Pa., presented me with numerous specimens from the locality last named. The apex is frequently eroded, as in most Floridan fresh-water shells. The folds of the surface are a unique character in American Bythinellæ, but I do not doubt that it belongs to this genus. I have seen specimens of *Tryonia* very similar to the *B. æquicostata*, but usually *Tryonia* is more strongly ribbed. I think it likely that this is the same form that was dredged by Professor Heilprin in Lake Okeechobee.*

Hydrobia monroensis Frauenfeld. pl. III, figs. 17, 18, 19.

My attention was first called to Frauenfeld's descriptions of Floridan Rissoidæ when engaged in identifying a number of species sent me by Mr. C. T. Simpson. About that time Dr. Dall published descriptions of several Floridan Rissoids,† among them one which he called *Bythinella monroensis*; writing under it as a doubtful synonym *Hy. monroensis* Frauenfeld. Upon looking over the Academy collection I found a specimen of *H. monroensis* marked by Frauenfeld himself, and sent by him to Mr. Tryon many years ago. This specimen is drawn in fig. 17 of pl. iii, and corresponds exactly with Frauenfeld's description, which is as follows:

"Eine Verwandte von *jamaicensis* Ad. oder *cristallina* [sic] Pfr. durch mehr oder minder gerandete Naht unterschieden. Schale keglich, nicht sehr stark, graugrün, ölglänzend. 5½ Windungen, leicht gewölbt, Naht gerandet. Mündung länglich, nach unten stark vorgezogen, oben etwas gewinkelt, Saum nicht scharf, an der Windung lang angelegt. Nabelspalte fein. Länge 3.8 mill., Breite 2.1 mill."

All of Frauenfeld's specimens were from Lake Monroe.

Note in this description the passages which I have italicized, and which agree perfectly with the shells I have figured, but not at all with Dr. Dall's species, which is quite a distinct form.

*Explorations on the West Coast of Florida, etc. Trans. Wagner Free Inst. i, 1887, p. 42.

†Proc. U. S. Nat. Mus. viii, 1885, p. 256, *et seq.*

The synonymy is as follows:

Hydrobia monroensis Frauenfeld, Verh. der k. k. zool-bot Gesell. Wien, 1863, p. 1023.

Bythinella monroensis (Frau.) Tryon, Continuation of Haldeman's Monog. Fresh-water univalve Moll. U. S., p. 48.

Not *B. monroensis* Dall, Proc. U. S. Nat. Mus. viii, 1885, p. 256, pl. xvii, fig. 9.

Figures 18 and 19 of the plate are drawn from specimens collected by Mr. C. T. Simpson in Hillsborough River, W. Florida. I have also seen specimens from Florida Springs, Fla.

Amnicola peracuta Pilsbry & Walker. Pl. III fig. 20.

Shell ovate-conoidal, rather thin, narrowly perforate, light olivaceous or a little tinged with yellowish, quite smooth, somewhat shining. Whorls about 5, or a trifle less, convex, the sutures well-impressed. The spire is rather slender, acute at the apex. Aperture about one-half the total length of the shell or a little less, ovate, angular above, broadly rounded beneath; peristome adnate to the whorl above the umbilicus.

Alt. 4, diam 2.8 mill.

Spivey's Lake, Navarro Co., Texas.

This species is most nearly allied to *A. cincinnatiensis* Anth. but is smaller, more slender, more narrowly perforate, the whorls, especially the last, less convex, more sloping above. The spire of *A. peracuta* is longer, the peristome is adherent to the body-whorl for a greater distance, and is not thickened within. The peculiar dentition of *A. cincinnatiensis* is shared by this species.

The types were collected by Mr. G. C. Heron, and sent me by Mr. Bryant Walker of Detroit, Mich., under the above mss. name. I have received the same shell from Comal Co., collected by Mr. Singley.

Sphærium (Limosina) singley i Pilsbry. Pl. III, figs. 14, 15.

This is a small species allied to *S. meridionale*, *S. maculatum*, *S. cubense*, etc. The shell is small, inequilateral, wide and truncate posteriorly, narrower and rounded anteriorly, ventral margin gently curved, the hinge line curved a little less than the lower outline; beaks small, not calyculate. Surface shining, striatulate. Color corneous yellow, variegated with large and small irregular maculations of blackish-brown. The blotches seem to be composed of close clusters of dots.

Length 5, alt. (at the beaks) $3\frac{1}{2}$, diam. 2 mill.

Cedar Creek, Hudson Co. (G. C. Heron) and Guadalupe River, Comal Co., Texas. (J. A. Singley.)

The shells from Comal Co. are smaller than the specimen figured, but are precisely the same in form and coloration. *S. cubense* is a differently-proportioned shell, its valves are more convex, and the dark spots are small.

S. meridionale and *S. maculatum* have similar large color-blotches, but they are both decidedly larger species and differ from *S. singleyi* in outline. This is the first species of the group *Limosina* which has been found within the borders of the United States.